CLAIMS

1. A print media sensor device comprising:

a driver for vibrating a print medium to create standing waves therein;

an emitter for irradiating the print medium with radiation having a predetermined intensity;

a reflective sensor for sensing an amount of the radiation reflected from the print medium; and

control means for determining a type of the print medium based on the amount of the radiation reflected from the print medium and sensed by the reflective sensor.

2. The device of claim 1, further comprising a transmissive sensor for sensing an amount of the radiation transmitted through the print medium; and

wherein the control means is further for determining a type of the print medium based on the amount of the radiation reflected from the print medium and sensed by the reflective sensor and on the amount of the radiation transmitted through the print medium and sensed by the transmissive sensor.

3. The device of claim 2, wherein:

the transmissive sensor is further for sensing an amount of the radiation transmitted through the print medium while the print medium is vibrating;

the reflective sensor is further for sensing an amount of the radiation reflected from the print medium while the print medium is vibrating; and

the control means is further for calculating a ratio between the amount of the radiation reflected from the print medium while the print medium is vibrating and the amount of the radiation transmitted through the print medium while the print medium is vibrating, and for comparing the ratio to a predetermined table of stored ratios, corresponding print medium types, and ink volume and application rate values to determine an ink volume and application rate for the print medium.

4. The device of claim 2, wherein the control means is further for determining if the amount of the radiation sensed by the transmissive sensor is indicative of deterioration of the emitter by comparing an amount of the radiation sensed by the transmissive sensor when the print medium is not present to a default value; and

wherein the control means is further for adjusting an intensity of the radiation irradiated by the emitter if the amount of the radiation sensed by the transmissive sensor when the print medium is not present is indicative of the deterioration.

5. The device of claim 2, wherein:

the control means is further for calculating a ratio between the amount of the radiation sensed by the reflective sensor and the amount of the radiation sensed by the transmissive sensor and for comparing the ratio to a table of ratios, each associated with a print medium type to determine the type of the print medium, and

the driver is further for vibrating the print medium at an alternative frequency to create the standing waves therein if the control means cannot determine the type of the print medium after comparing the ratio to the table of ratios, each associated with a print medium type.

6. The device of claim 2, wherein the control means comprises a control unit that is remotely located with respect to the ultrasonic driver, the emitter, the reflective sensor and the transmissive sensor.

7. The device of claim 2, wherein:

the emitter is further for irradiating the print medium with the radiation having the predetermined intensity prior to the driver vibrating the print medium to create the standing waves therein;

the reflective sensor is further for sensing an amount of the radiation reflected from the print medium prior to the driver vibrating the print medium;

the transmissive sensor is further for sensing an amount of the radiation transmitted through the print medium prior to the driver vibrating the print medium; and

the control means further being for determining a type of the print medium based on a ratio of the amount of the radiation reflected from the print medium prior to the driver vibrating the print medium and the amount of radiation transmitted through the print medium prior to the driver vibrating the print medium.

8. The device of claim 1, wherein the emitter comprises a light emitting diode.

9. A method of determining a print medium type comprising:

vibrating a print medium at a predetermined frequency;

irradiating the print medium with radiation having a predetermined intensity level during the vibrating of the print medium at a predetermined frequency;

measuring an irradiation characteristic of the print medium during the irradiating of the print medium with radiation having a predetermined intensity level and the vibrating of the print medium at a predetermined frequency; and

comparing the measured irradiation characteristic to a table of stored irradiation characteristics and corresponding print medium types to determine a type of the print medium.

10. The method of claim 9, wherein:

the measuring of an irradiation characteristic of the print medium comprises measuring a ratio of an amount of radiation reflected from the print medium to an amount of radiation transmitted through the print medium; and

the comparing of the measured irradiation characteristic to the table of stored irradiation characteristics and corresponding print medium types to determine the type of the print medium further comprises comparing the ratio of the amount of radiation reflected from the print medium to the amount of radiation transmitted through the print medium with a table of stored ratios and the corresponding print medium types to determine the type of the print medium.

11. The method of claim 9, wherein the measuring of an irradiation characteristic of the print medium further comprises measuring an amount of the radiation reflected from the print medium.

12. The method of claim 9, wherein the measuring of an irradiation characteristic of the print medium further comprises measuring an amount of the radiation transmitted through the print medium.

13. The method of claim 9, further comprising adjusting an ink volume and application rate based on the comparing of the measured irradiation characteristic to a table of stored irradiation characteristics and corresponding print medium types to determine the type of the print medium.

14. The method of claim 9, further comprising:

irradiating the print medium with the radiation having the predetermined intensity level prior to the vibrating of the print medium at the predetermined frequency;

measuring an irradiation characteristic of the print medium during the irradiating of the print medium; and

comparing the irradiation characteristic to the table of stored irradiation characteristics to determine a general type of the print medium level prior to the vibrating of the print medium at the predetermined frequency.

15. The method of claim 9, further comprising:

measuring a luminous intensity of an emitter device when the print medium is not present;

comparing the luminous intensity of the emitter device to a default luminous intensity value; and

adjusting the luminous intensity of the emitter device based upon the comparing of the luminous intensity of the emitter device to a default luminous intensity value.

16. The method of claim 9, further comprising:

vibrating the print medium at alternative frequencies until standing waves are generated therein if, after the measuring of an irradiation characteristic of the print medium, it is determined that the measured irradiation characteristic of the print medium differs from all values in the table of stored irradiation characteristics by more than a specific amount.

17. A system for determining a print medium type comprising:

an ultrasonic driver for vibrating a print medium at a resonant frequency of the print medium;

a light emitting diode for irradiating the print medium with light having a predetermined luminous intensity;

a transmissive sensor for sensing a percentage of the light transmitted through the print medium while the print medium is vibrating at the resonant frequency;

a reflective sensor for sensing a percentage of the light reflected from the print medium while the print medium is vibrating at the resonant frequency; and

control means for comparing a ratio of the percentage of the light transmitted through the print medium to the percentage of the light reflected from the print medium with a table of default ratios with corresponding print medium types and ink volume and application rates to determine an ink volume and application rate for the print medium.

18. The system of claim 17 wherein:

the transmissive sensor is further for sensing a percentage of the light transmitted through the print medium prior to the print medium being vibrated at the resonant frequency;

the reflective sensor is further for sensing a percentage of the light reflected from the print medium prior to the print medium being vibrated at the resonant frequency; and

the control means is further for comparing a ratio of the percentage of the light transmitted through the print medium prior to the print medium being vibrated at the resonant frequency to the percentage of the light reflected from the print medium prior to the print medium being vibrated at the resonant frequency to the table of default ratios to determine a general print medium type.

19. The system of claim 17 wherein:

the transmissive sensor is further for sensing the predetermined luminous intensity of the light irradiated by the light emitting diode when no print medium is present;

the control means is further for comparing the predetermined luminous intensity of the light irradiated from the light emitting diode when no print medium is present to a stored default value to determine if the light emitting diode needs to be calibrated, and for adjusting the predetermined luminous intensity of the light irradiated by the light emitting diode if the predetermined luminous intensity differs from the default value.

20. The system of claim 19, wherein the control means adjusts the predetermined luminous intensity of the light irradiated by the light emitting diode by adjusting a current flow to the light emitting diode.